Patent claims

1. Apparatus for receiving a data stream (102) which can be transmitted via at least one data transmission path (101, 101a, 101b, 101c), having:
   a) a data stream receiver (100) for receiving the data stream (102);
   b) a power delay profile determination unit (303) for determining at least one power delay profile (300);
   c) a peak value detection device (501) for detecting at least one peak value (401a-401n) in the determined power delay profile (300);
   d) a data transmission path profile determination device (502) for determining a data transmission path profile for the at least one data transmission path (101);
   e) a filtering device (503) for suppressing shadow transmission path signals (101s) and for outputting a finger positioning signal (504); and
   f) a setting device (305) for setting data transmission paths (101), which are associated with a data transmission, on the basis of the finger positioning signal (504).

2. Apparatus according to claim 1,
characterized
in that the peak value detection device (501) has a comparison unit for comparing the power delay profile (300) with a first threshold value (103a).

3. Apparatus according to claim 1,
characterized
in that a power delay profile determination unit (303) for determining at least one power delay profile (300) for the at least one data transmission path (102) is additionally provided.

4. Apparatus according to claim 1, characterized in that the data stream receiver (100) accepts data streams (102) via at least two different data transmission paths (101a, 101b).

5. Apparatus according to claim 1, characterized in that the peak value detection device (501) has a threshold value setting unit which can be used to set the first threshold value (103a) adaptively.

6. Apparatus according to claim 1, characterized in that the data transmission path profile determination device (502) has a data transmission path profile unit (502a) for summing weighted peak values (401a-401n) and a data transmission path detection unit (502b) for detecting a valid data transmission path.

7. Apparatus according to claim 1, characterized in that the power delay profile determination unit (303) is provided together with a peak value sorting unit (701) in a common matched hardware block (602).

8. Apparatus according to claim 1, characterized in that a received signal strength determination unit (606) for determining the received signal strength of the received signal (301) is provided in a matched hardware block (602).

9. Method for receiving a data stream (102) transmitted via the at least one data transmission path (101, 101a, 101b, 101c), having the following steps:

a) the data stream (102) is received in a data stream receiver (100) via at least one data transmission path (101, 101a, 101b, 101c);

b) at least one power delay profile (300) is determined using a power delay profile determination unit (303);

c) at least one peak value (401a-401n) in the determined power delay profile (300) is detected using a peak value detection device (501);

d) a data transmission path profile for the at least one data transmission path (101, 101a, 101b, 101c) is determined in a data transmission path profile determination device (502);

e) shadow transmission path signals (101s) are suppressed and a finger positioning signal (504) is output by a filtering device (503); and

f) data transmission paths (101, 101a, 101b, 101c), which are assigned to a data transmission, are set on the basis of the finger positioning signal (504) using a setting device (305).

10. Method according to claim 9,
characterized
in that a first threshold value (103a) is set on a variable basis in the peak value detection device (501).

11. Method according to claim 10,
characterized

in that the first threshold value (103a) is set on the basis of a noise environment.

12. Method according to claim 10,
characterized
in that the first threshold value (103a) is set on the basis of a mean value, a variance and/or a standard deviation for noise peak values (402a-402n).

13. Method according to claim 10,
characterized
in that the first threshold value (103a) is matched to a noise environment such that a preselection of possible data transmission path positions is provided.

14. Method according to claim 9,
characterized
in that the power delay profile estimation and the peak value detection are performed periodically by the peak value detection device (501).

15. Method according to claim 14,
characterized
in that the power delay profile estimation and the peak value detection are performed periodically by the peak value detection device (501) at an interval of time which corresponds to a data frame (203) or to a multiple of data frames (203).

16. Method according to claim 9,
characterized
in that the data transmission path profile determination device (502) stores a prescribable number (M) of preceding periods and sums the detected peak values (401a-401n) in the manner of an ongoing histogram.

17. Method according to claim 16, characterized in that the data transmission path profile determination device (502) stores the prescribable number (M) of preceding periods and weights the detected peak values (401a-401n) before summation with a received signal strength.

18. Method according to claim 9 or 17, characterized in that the temporal summation points when the detected peak values (401a-401n) are summed by the data transmission path profile determination device (502) correspond to delay positions (k = 0, 1, ..., L-1) of a correlation function.

19. Method according to claim 9 or 18, characterized in that data transmission path positions which appear fewer than a predetermined number ($N_{occ}$) of times are set to zero.

20. Method according to claim 16, characterized in that a second threshold value (103b) is prescribed in the data transmission path profile determination device (502), and the peak values (401a-401n) summed in the manner of an ongoing histogram are compared with it.

21. Method according to claim 20, characterized in that the second threshold value (103b) is set on the basis of an existing noise.

22. Method according to claim 20, characterized

in that the second threshold value (103b) is provided on the basis of the first threshold value (103a), multiplied by a constant factor.

23. Method according to claim 9, characterized in that secondary maxima from a correlation filter are compared with a third threshold value (103c) in the filtering device (503) for suppressing shadow transmission path signals (101s).

24. Method according to claim 23, characterized in that the third threshold value (103c) is provided on the basis of the position of the strongest data transmission path (101, 101a-101c).

25. Method according to claim 10, 20 or 24, characterized in that the first, second and/or third threshold values (103a, 103b, 103c) are updated periodically.